



UTAH DEPARTMENT of
ENVIRONMENTAL QUALITY

**WATER
QUALITY**

Gold King Mine Spill: Status Update

NRAE Appropriations Subcommittee June 20, 2017

Erica Gaddis, Assistant Director

Gold King Mine Release

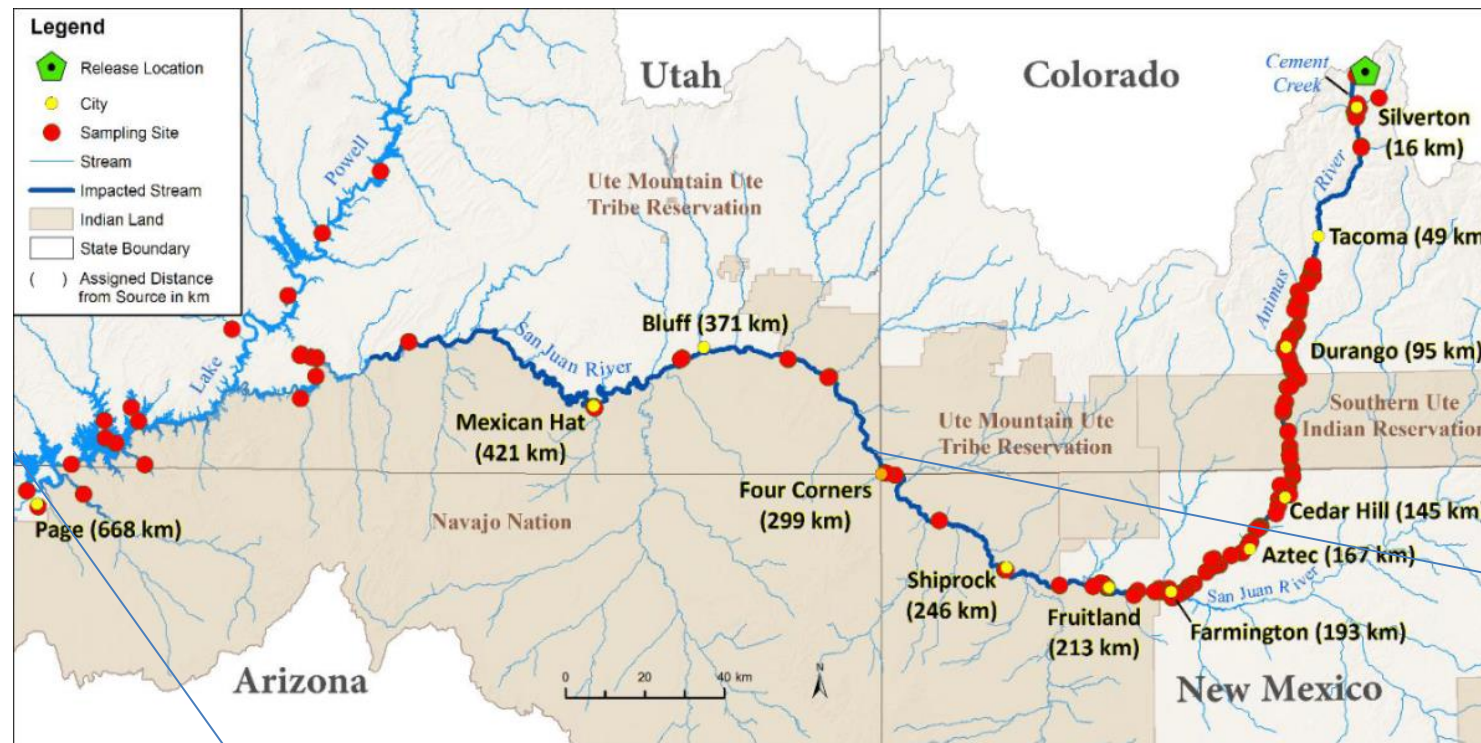
Release of 3 million gallons and 540 tons of metals on August 5, 2015

Arrived in Utah via San Juan River on August 9, 2015

EPA concluded that all material had been flushed into Lake Powell by July 2016

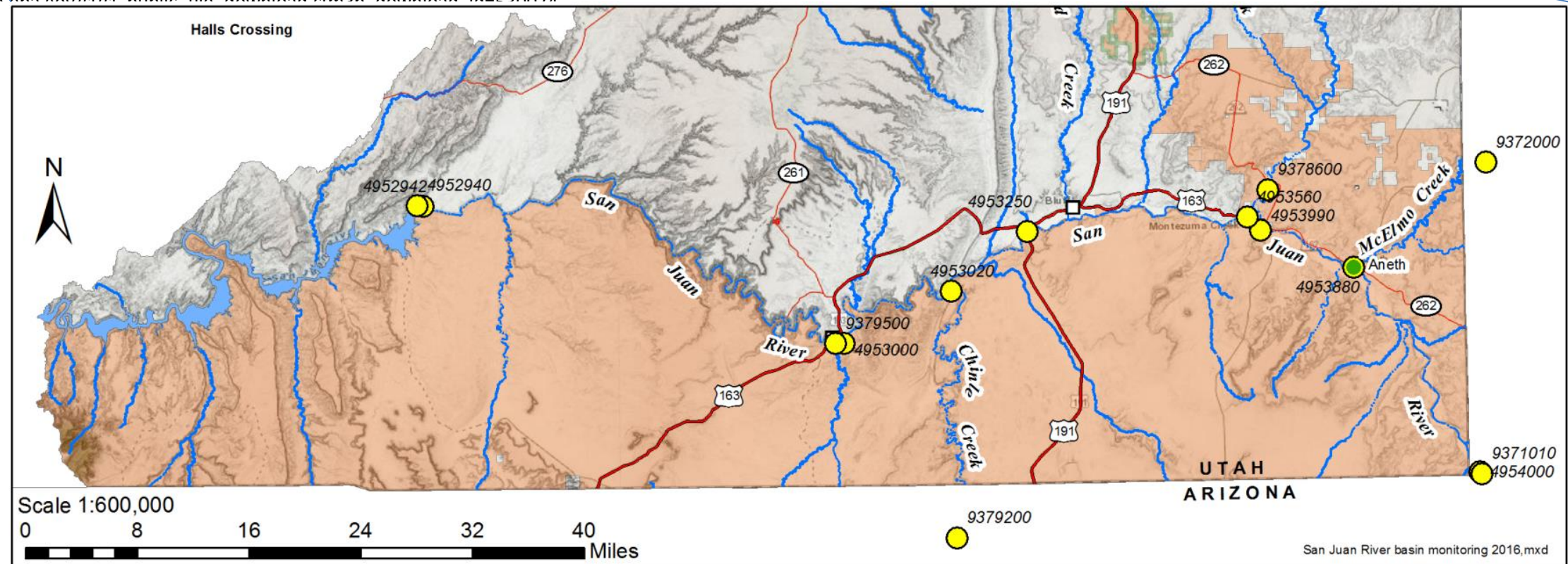


Response: Monitoring Phases



https://cfpub.epa.gov/csl/public_file_download.cfm?download_id=520074

- Phase 1: Initial Response August – October, 2015
- Phase 2: Spring Runoff February – July, 2016
- Phase 3: Long-Term Monitoring and Assessment



Screening Against Utah Water Quality Standards

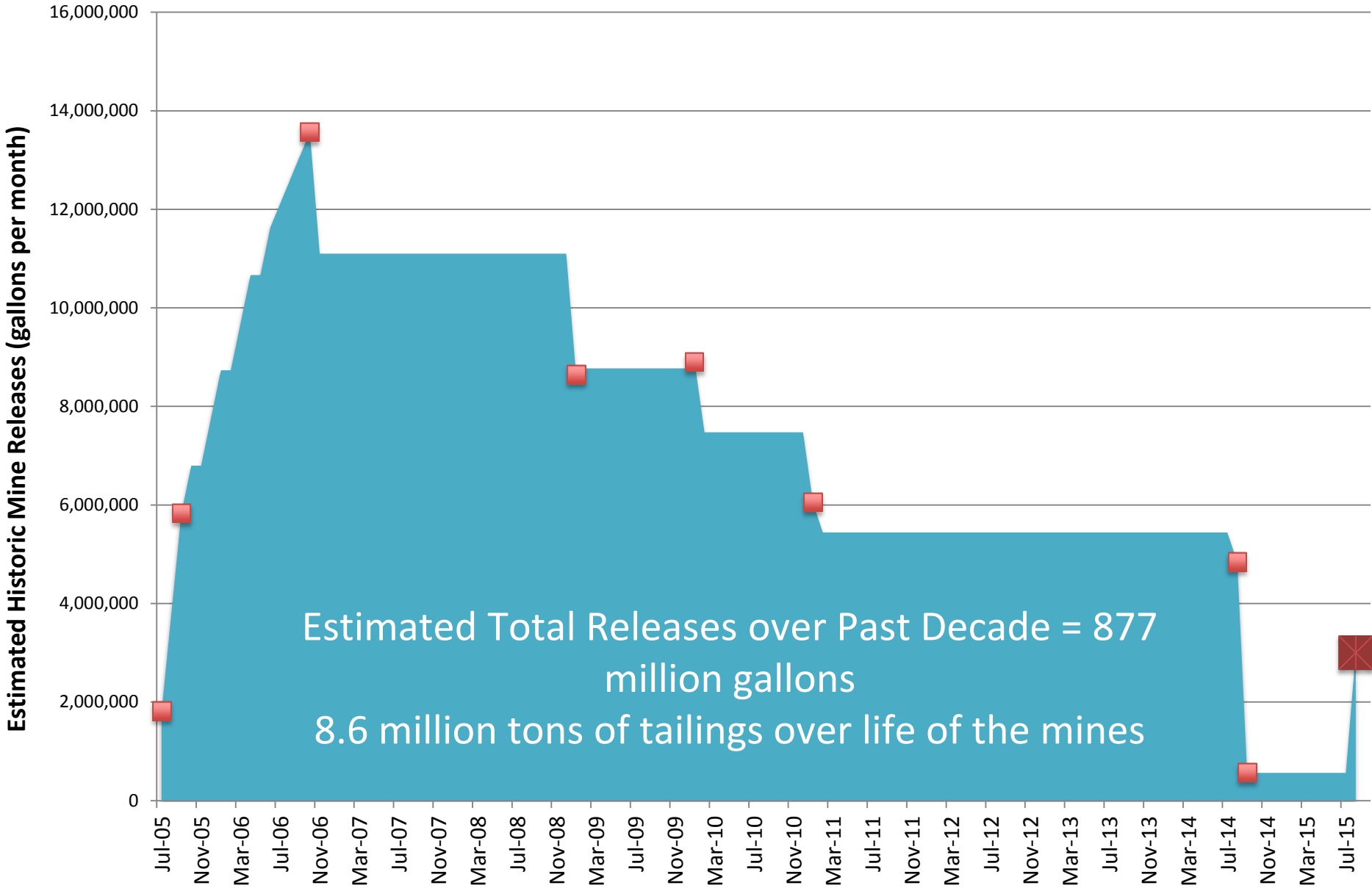
Aquatic Life Use (Dissolved Metals)																							
				No Exceedence																			
				Above Screening Level																			
				Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Utah Aquatic Life Use 1-hour				750		340			2	570		13	1000	65				468	18.4	1.6			120
Utah Aquatic Life Use 4-hour				87		150			0.25	74		9	1000	2.5		0.012		52	4.6				120
Monitoring Location	Site Description	Collection Date	Collection Time	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
		8/8/2015	1:23 PM	47,400	0.5	1.3	222.0	0.0	ND	ND	0.1	2.2	95.8	ND	2.9	ND	1.9	ND	0.7	ND	ND	4.9	15.3
		8/8/2015	12:02 PM	33,900	0.3	0.6	274.0	ND	ND	ND	0.1	2.5	119.0	ND	2.7	ND	2.0	ND	0.6	0.0	ND	1.8	18.5
		8/9/2015	3:05 PM	26,700	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		8/9/2015	6:00 PM	24,600	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		8/9/2015	9:02 PM	31,000	0.3	0.9	341.0	0.0	ND	ND	0.1	3.5	198.0	0.3	4.1	ND	1.9	ND	0.5	ND	ND	2.1	15.4
		8/10/2015	9:11 AM	39,900	0.5	1.0	233.0	ND	ND	ND	0.1	3.2	103.0	0.4	1.6	ND	2.0	ND	0.6	ND	ND	1.7	19.7
		8/10/2015	2:06 PM	43,700	0.7	1.3	220.0	0.1	ND	ND	0.4	3.4	732.0	1.0	12.8	ND	1.9	0.8	0.6	0.1	ND	3.6	18.0
		8/11/2015	8:50 AM	77,000	0.4	1.7	451.0	0.1	ND	ND	0.5	4.9	1,520.0	1.1	19.0	0.0	1.7	1.2	1.0	ND	ND	3.9	19.1
		8/11/2015	1:17 PM	56,900	0.1	1.3	334.0	ND	ND	ND	0.2	3.0	366.0	0.3	5.1	ND	1.6	ND	0.8	ND	ND	2.5	14.9
		8/12/2015	9:50 AM	31,100	0.6	0.9	178.0	ND	ND	ND	0.1	2.4	ND	ND	ND	ND	1.5	ND	0.8	0.0	ND	1.9	14.8
		8/12/2015	12:09 PM	28,500	0.5	1.2	151.0	ND	ND	ND	0.0	2.6	ND	ND	1.8	ND	1.5	ND	0.7	ND	ND	2.9	16.5
		8/13/2015	10:01 AM	38,700	0.2	1.3	213.0	0.0	ND	ND	0.1	3.7	148.0	0.4	3.2	ND	1.9	ND	0.9	ND	ND	2.1	21.9
		8/14/2015	8:50 AM	44,300	0.4	1.7	72.3	0.0	ND	ND	0.1	3.9	ND	ND	1.8	ND	3.7	3.1	1.1	ND	0.0	4.1	ND
		8/15/2015	9:43 AM	14,200	0.4	1.4	65.2	ND	ND	ND	0.1	1.4	ND	ND	ND	ND	2.3	ND	0.6	ND	ND	2.6	ND
		8/16/2015	9:15 AM	9,500	1.1	0.9	179.0	0.0	ND	ND	ND	2.9	ND	ND	ND	ND	1.7	ND	0.6	0.2	ND	1.9	12.6
		8/18/2015	9:56 AM	3,640	0.7	1.3	148.0	ND	ND	ND	0.1	2.3	ND	0.3	ND	ND	1.7	ND	0.6	0.0	ND	1.9	12.3
		8/19/2015	9:30 AM	4,070	0.7	1.3	106.0	ND	ND	ND	0.1	1.7	ND	ND	ND	ND	1.7	ND	0.5	0.0	ND	1.9	8.4
		8/20/2015	9:44 AM	3,650	0.8	1.3	132.0	ND	ND	ND	0.1	1.9	ND	ND	ND	ND	1.8	ND	0.6	0.1	0.0	1.9	8.1
		8/24/2015	3:10 PM	1,760	0.3	1.4	62.4	ND	ND	ND	0.0	2.2	ND	ND	1.9	ND	1.6	1.1	0.5	ND	ND	2.3	5.5
		8/25/2015	3:30 PM	1,500	0.5	1.4	63.4	ND	ND	ND	ND	2.1	ND	ND	1.9	ND	1.6	ND	0.6	ND	ND	2.5	ND
		8/26/2015	2:50 PM	1,540	0.6	1.5	70.5	0.1	ND	ND	0.3	2.8	554.0	0.5	21.8	ND	1.6	1.1	0.6	0.1	0.0	3.3	8.0
		8/27/2015	3:40 PM	117,000	0.3	1.0	121.0	0.1	ND	ND	0.4	3.3	605.0	0.5	11.4	ND	3.3	2.0	0.9	ND	ND	3.4	6.2
		8/28/2015	4:25 PM	196,000	0.2	5.6	340.0	1.6	0.3	12.0	9.0	27.7	16,700.0	15.7	413.0	0.0	1.5	12.7	0.8	0.1	0.2	26.2	72.8
		9/23/2015	6:30 PM	5,120	0.7	1.0	81.5	0.1	ND	ND	0.3	1.9	ND	ND	9.3	ND	1.8	1.3	0.7	0.1	0.1	1.8	ND
		10/2/2015		183,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Designated Use	2015 WExceedances		2016 Exceedances	
	Count	Metals	Count	Metals
Domestic Water	1	Lead	0	
Aquatic Life	16	Cadmium, Copper, Iron, Lead, Zinc	126	Aluminum
	149	Aluminum		
Recreational	0	NA	0	
Agricultural	6	Aluminum Iron Manganese	1	Molybdenom



Cumulative Releases Over a Decade

Estimated Historic Mine Releases (gallons per month)



Bonita Peak Mining District

Declared superfund site in July 2016

48 historic mines near Silverton, CO



Figure 7.—Photograph showing the seepage outflow from the drain pipe at the American Tunnel at Gladstone, Colorado, as it appeared on September 3, 2015, with about 100 gpm of acid water flowing out.



Figure 12.—Photograph taken on September 15, 2015, of drainage from the Silver Ledge Mine, which is located south of the Gold King Mine.



Figure 11.—Photograph showing acid drainage flowing out of the Red and Bonita Mine on September 3, 2015.

Long-term Work Plan Elements

Water Quality Monitoring to Inform Public and Protect Uses of San Juan River

Task 1: Surface Water Quality Monitoring

Task 2: Real-time Reporting of Water Quality Conditions

Drinking Water Quality Monitoring

Task 3: Public Drinking Water Systems Monitoring

Task 4: Private Well Monitoring

Metals Load Analysis and Source Characterization

Task 5: Total Metals Load Analysis

Task 6: Inventory of Sources in the San Juan River Watershed

Accumulation of Metals in San Juan River and Lake Powell

Task 7: Sediment sampling in San Juan River and Tributaries

Task 8: Sediment Traps in Lake Powell

Task 9: Sediment Core Study in Lake Powell

Assessing Impacts on Human Health and Aquatic Life Uses

Task 10: Ecological Risk Assessment

Task 11: Human Health Risk Assessment

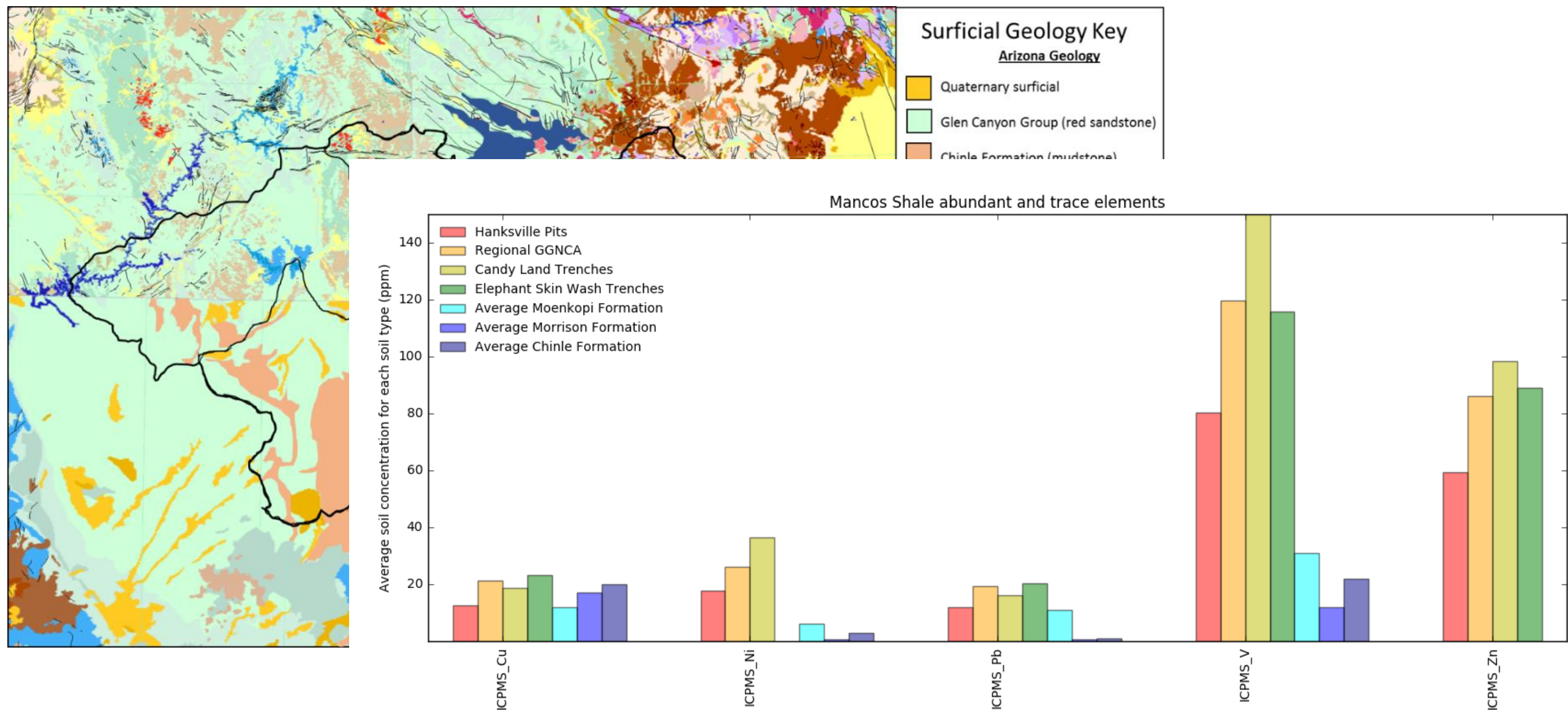
Coordination and Outreach

Task 12: Inter-agency Partnership and Collaboration

Task 13: Public Information and Stakeholder Outreach



Source Identification

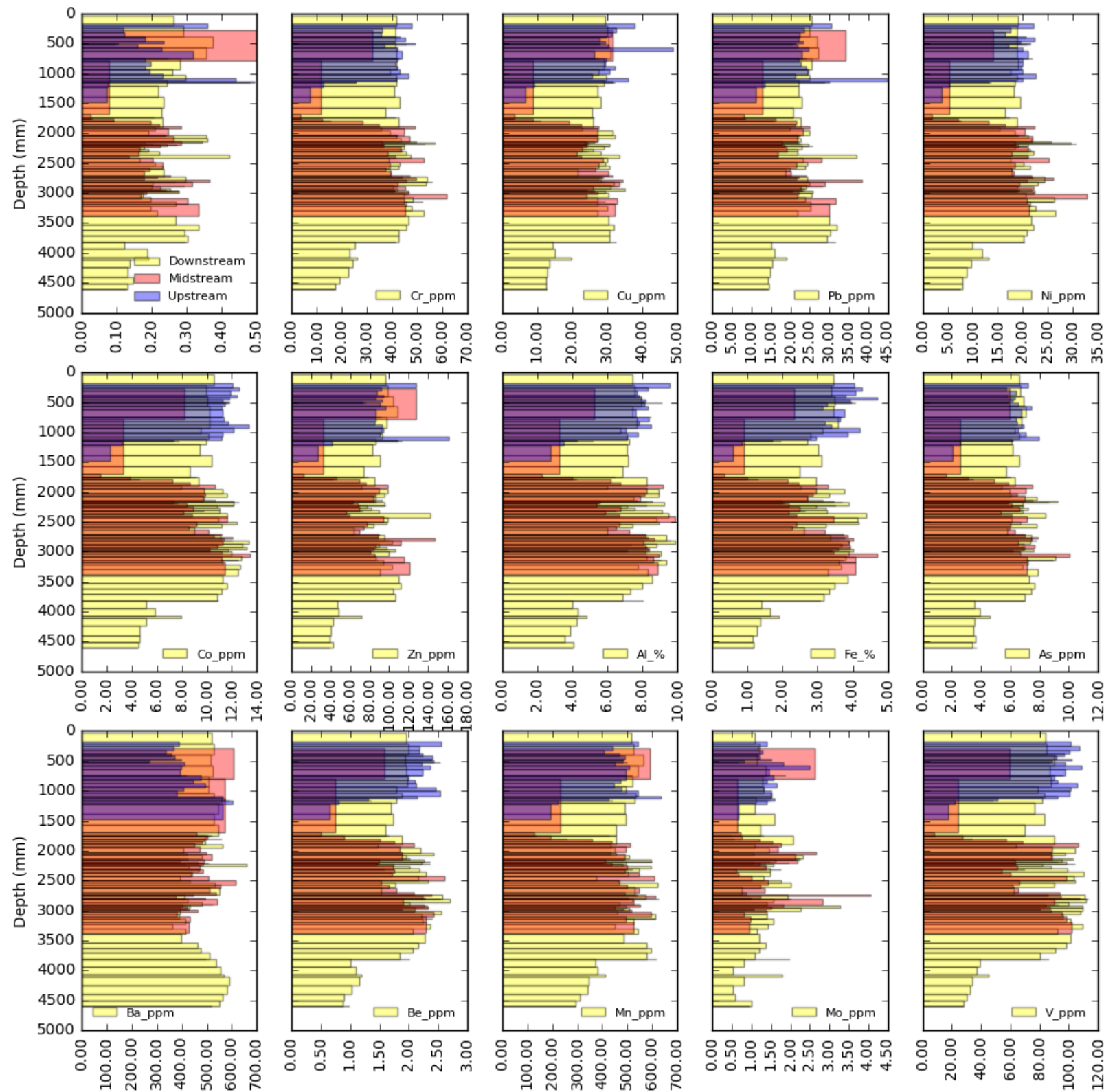


UDEQ funding efforts to identify relative importance of natural and mining sources in basin
Different elemental contributions from different geologic sources (e.g., Mancos Shale)

2010 USGS Lake Powell Sediment Cores



2010 USGS Lake Powell Sediment Cores



Aquatic Life Screening Value Exceedances

- Exceedances of Al, As, Cr, Cu, Fe, Pb, Mn, Ni, Zn
- Across all 3 cores and at multiple depths



Costs and Reimbursement

Phase 1: \$463,902 incurred costs

Fully reimbursed by EPA

Phase 2: \$212,326 incurred costs

EPA provided preliminary approval for reimbursement

Phase 3 – \$191,566 incurred costs

Submitted to EPA on June 14, 2017

Long-term Monitoring and Assessment (\$465,000)

Awarded in Summer 2016

Water Infrastructure Improvements for the Nation Act (WIIN Act)

Congressional appropriations of \$4 million per year for 5 years to cover GKM related issues

Exploring collaborative monitoring effort with other affected states and tribes



Legal Efforts

Legal team is monitoring pending litigation brought by State of New Mexico and the Navajo Nation in Federal Court.

Future legal claims would seek damages associated with past and on-going releases.

State of Utah has taken the necessary procedural steps to preserve future legal claims that may be asserted against EPA, the contractors, and mines.

Legal action will depend on further review and direction from the appropriate decision makers.



Questions

